

Serial No. 10/748,084

Atty. Docket 30882/MEYS103

**Remarks**

This paper is being presented in response to an official action dated January 24, 2006, wherein claims 1-32 were pending, claims 1-29 were withdrawn, and claims 30-32 were rejected under 35 U.S.C. § 103.

**Brief Summary of the Amendments**

Claims 1-29 and 31 have been canceled. Claim 30 has been amended to be in independent form and explicitly recite a material comprising a ceramic, including a lower value for the recited size ratio of 12.4. Claim 32 has been amended to be in independent form. New claims 33 and 35 recite a lower value of 12.4 for the recited size ratio. New claim 34 recites a method of forming a dental product from the claimed ceramic material.

Support for the amendments to claim 30 and for claims 33 and 35 is found in the original claims and in the original specification at page 12, lines 31 to 33, and page 13, lines 19 to 21 and 26 to 31. Support for new claim 34 is found in the original claims and throughout the original specification. No new matter has been added and the amendments do not require an additional search.

**The 35 U.S.C. § 103(a) Rejections are Moot and/or Traversed**

Claims 30-32 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Application Publication No. 2002/0193462 ("the '462 publication") and in the alternative over U.S. Patent No. 5,376,442 ("the '442 patent"). The rejection as to claim 31 is moot, as the claim has been canceled.

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The '462 Publication

Claim 30 has been amended to positively recite a ceramic. Claim 32 previously recited a ceramic, and thus the rejection as to claim 32 is traversed.

The '462 publication discloses only a dental composite which comprises an organic polymer resin and an inorganic filler (see page 1, [0002], [0003] and [0005]; page 3, [0023], Table 1 and [0024], and page 6, claim 1). According to the '462 publication, the filler is only used to reinforce the resin by dislocating flaws in the resin in the matrix around the filler (see page 1, [0003]).

Furthermore, the '462 publication proposes to use its particular inorganic filler because it purportedly provides an increase in the strength of the cured resin, while also decreasing the shrinkage of the resin upon curing (see page 2, [0011]).

Because the '462 publication does not concern the same kind of material as the claimed invention, and because it does not disclose a ceramic formed with a bimodal oxide powder, this kind of ceramic could neither be considered as disclosed nor as being obvious in view of the '462 publication.

Moreover, the surprising strengthening of the ceramic obtained by using a bimodal oxide powder is not even suggested in the teaching of the '462 publication because the effect of dislocating flaws around the filler plays no role in a ceramic, which comprises neither a resin matrix nor a filler.

The foregoing distinctions apply with equal force to new claims 33-35.

The '442 Patent

Claim 30 has now been amended to recite that "the size ratio of the  $d_{50}$  values of (a) to (b) lies between 12.4 and 40 to 1." Claims 33 and 35 recite parallel elements. The '442 patent discloses a maximum particle size ratio of 10 (see column 3, lines 4-5).

Claims 32-35 are all directed to dental products and methods. The '442 patent does not disclose or suggest the use of such compositions as or in dental materials or dental products. Accordingly, the rejection as to claim 32 is traversed, and claims 33-35 should be allowed for the same reasons.

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A particle size ratio between 12.4 and 40 leads to important advantage for dental ceramics, because use of small particles with an average size which is smaller than the wavelength of visible light allows one to obtain transparent or at least translucent ceramics. Actually, using particles with a size smaller than 1/20 of the wavelength of the visible light leads to transparent ceramic. From an aesthetic point of view, the translucency of dental ceramic and thus the use of small particles is an advantage not recognized in the cited art, which is not directed to dental applications.

In addition, using only particles with the particle size less than 1 micron for forming a dental ceramic has, beside the high production costs of these particles, some other important drawbacks. The high sintering activity can for example cause undesired agglomeration and increased grain growth. Moreover, the low bulk density or tap density often renders the shaping procedure difficult.

A high size ratio of between 12.4 and 40 of claims 30, 33, and 35 thus allows for each size of the small particles, useful to achieve translucency in or transparency, to use more than 10 times bigger and therefore cheaper particles, which, while providing an even more convenient shaping procedure because of the bigger size and higher tap density, in addition also better prevents undesired agglomeration and increased grain growth.

The '442 patent does not disclose the size ratio higher than 10, as it makes no sense the context of its disclosure. Further, the '442 patent does not provide any motivation for the use of small particles to provide transparency and/or translucency. Moreover, the '442 patent does not disclose that small particles render the shaping difficult while also causing undesired agglomeration and increased grain growth.

Increasing the size ratio to between 12.4 and 40 does allow one to obtain good translucency and convenient shaping, while keeping the time and effort spent on the production of the powder as low as possible. It may, therefore, not be considered as obvious to increase the size ratio of the used particles to between 12.4 and 40, as the advantages obtained thereby are not suggested in the '442 patent.

Finally, as previously mentioned, the '442 patent does not disclose or suggest the use of such materials in dental applications, as presently claimed in claims 32-35.

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**CONCLUSION**

In view of the foregoing, cancellation of claims 1-29 and 31, entry of the amendments to claims 30 and 32, and entry of new claims 33-35 are respectfully requested.

In the absence of more pertinent prior art, withdrawal of the rejections and allowance of all claims 30 and 32-35 are respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form or procedure in an effort to advance this application to allowance, the examiner is urged to telephone the undersigned attorney at the indicated number.

Respectfully submitted,

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By

  
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